

WHAT IS CLAIMED IS:

1. A targeted recombinant adenovirus vector,  
comprising:

5 (i) a gene encoding a heterologous protein;

(ii) a modified fiber protein comprising an  
immunoglobulin-binding domain; and

(iii) a gene encoding a fusion protein comprising a  
targeting ligand and an immunoglobulin Fc domain, wherein binding  
10 of said immunoglobulin-binding domain to said Fc domain connects  
said targeting ligand to said modified fiber protein, thereby  
targeting said adenovirus vector to a cell that expresses a cell  
surface molecule that binds to said targeting ligand.

15

2. The targeted adenovirus vector of claim 1, wherein  
said immunoglobulin-binding domain is the Fc-binding domain of  
*Staphylococcus aureus* Protein A.

20

3. The targeted adenovirus vector of claim 1, wherein said immunoglobulin-binding domain is inserted at the HI loop or the carboxy terminal of said fiber protein.

5

4. The targeted adenovirus vector of claim 3, wherein said immunoglobulin-binding domain inserted at the HI loop is flanked by flexible linkers.

10

5. The targeted adenovirus vector of claim 1, wherein said fiber protein is a fiber-fibritin chimera, and said immunoglobulin-binding domain is inserted at the carboxy terminal of said fiber-fibritin chimera.

15

6. The targeted adenovirus vector of claim 1, wherein said targeting ligand is selected from the group consisting of CD40 ligand and a single chain fragment (scFv) of anti-human CD40

20 antibody.

7. The targeted adenovirus vector of claim 1, wherein said heterologous protein is a tumor associated antigen.

5

8. The targeted adenovirus vector of claim 1, wherein said tumor associated antigen is prostate-specific membrane antigen.

10

9. A CD40-targeted recombinant adenovirus vector, comprising:

(i) a gene encoding a heterologous protein;

(ii) a modified fiber protein comprising an immunoglobulin-binding domain; and

(iii) a gene encoding a fusion protein comprising an immunoglobulin Fc domain and a targeting ligand selected from the group consisting of CD40 ligand and a single chain fragment (scFv) of anti-human CD40 antibody, wherein binding of said immunoglobulin-binding domain to said Fc domain connects said

targeting ligand to said modified fiber protein, thereby targeting said adenovirus vector to a CD40<sup>+</sup> cell.

5                    10. The targeted adenovirus vector of claim 9, wherein said immunoglobulin-binding domain is inserted at the HI loop or the carboxy terminal of said fiber protein.

10                   11. The targeted adenovirus vector of claim 10, wherein said immunoglobulin-binding domain inserted at the HI loop is flanked by flexible linkers.

15                   12. The targeted adenovirus vector of claim 9, wherein said immunoglobulin-binding domain is the Fc-binding domain of *Staphylococcus aureus* Protein A.

20                   13. The targeted adenovirus vector of claim 9, wherein said fiber protein is a fiber-fibritin chimera, and said

immunoglobulin-binding domain is inserted at the carboxy terminal of said fiber-fibritin chimera.

5                    14. The targeted adenovirus vector of claim 9, wherein  
said CD40<sup>+</sup> cell is a dendritic cell.

10                    15. The targeted adenovirus vector of claim 9, wherein  
said anti-human CD40 antibody is G28.5.

15                    16. The targeted adenovirus vector of claim 9, wherein  
said heterologous protein is a tumor associated antigen.

20                    17. The targeted adenovirus vector of claim 16,  
wherein said tumor associated antigen is prostate-specific  
membrane antigen.

18. The targeted adenovirus vector of claim 9, wherein said gene encoding said heterologous protein and said gene encoding said fusion protein are operably linked to a dendritic cell-specific promoter.

5

19. A method of gene transfer to CD40<sup>+</sup> cells, comprising the step of:

contacting said cell with the targeted adenovirus vector  
10 of claim 9, wherein said targeted adenovirus vector mediates transfer of said gene encoding said heterologous protein to said cell.

20. The method of claim 19, wherein said CD40<sup>+</sup> cells  
15 are dendritic cells.